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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.

EXAMINER

ART UNIT	PAPER NUMBER
	6

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/404,076	Applicant(s) CANFIELD ET AL.	
	Examiner Karen Clemens	Art Unit 1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2001 and 25 April 2001* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15)☐ Notice of References Cited (PTO-892)
16)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18)☐ Interview Summary (PTO-413) Paper No(s). _____ .
19)☐ Notice of Informal Patent Application (PTO-152)
20)☐ Other: .

DETAILED ACTION

1. Applicant's amendment, filed 5/20/00 (Paper No. 23), is acknowledged.

2. Claims 1 and 4 are pending and under consideration.

3. Receipt of the Terminal Disclaimer received 5/25/01 in compliance with 37 C.F.R.1.321(b) is acknowledged.

In view of the amendment filed 3/16/01 (Paper No. 5), the following rejection remains:

4. The following is a quotation of 35 U.S.C. §103 which forms the basis for all obviousness rejections set forth in this Office action:

> "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. 1.56 to point out the inventor and invention dates of each claim

that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a). The following is a quotation of the first paragraph of 35 U.S.C. 112:

Claims 1 and 4 stand rejected under 35 U.S.C. §103(a) as being unpatentable over O'Connor et al. (*Endocrine Reviews* 15(6):650-683, 1994) in view of Campbell *(Monoclonal Antibody Technology*, Elsevier Sci. Publishing, 1984) for the same reasons set forth in Paper No. 4, dated 9/13/00.

Applicant's arguments, filed 3/16/01 (Paper No. 5), have been fully considered but are not found persuasive.

Applicant argues that the O'Connor et al. reference does not teach the invention of claim 1, i.e. an "*antibody* which specifically binds to human luteinizing hormone beta core fragment (hLHβcf) without cross reacting with hLH, hLHβ or hCGβcf". Applicant's further submit that O'Connor et al. does not teach, suggest or disclose the human luteinizing hormone free beta subunit. Applicant's further state that the secondary reference, Campbell, is a general reference regarding the synthesis of monoclonal antibodies which does not teach, suggest or disclose human luteinizing hormone free beta subunit. In addition, Applicant's note that the O'Connor et al. reference states that the production of "monoclonal antibodies specific for hCG, as compared to the highly homologous hLH has not been a straightforward process" and there would not have been a reasonable expectation of success in making the claimed antibody specific for one but not the other molecule, such as hCG but not hLH.

However, the Examiner notes that O'Connor et al. does not describe *antibodies* synthesized specifically against the human luteinizing hormone beta core fragment but does describe the (antigens) structural similarity and dissimilarities between the hCG, hCGβ, hCG β-core fragment, hLH, hLHβ, and the hLH β-core fragment (the β core fragment being homologous proteolytically cleaved fragments of the β subunit of hCG or hLH) and the difficulty in obtaining antigen–specific sera between the members (see page 654, column 2 and page 657 column 2 to 658 column 1 in particular). O'Connor et al. note the identity between the α subunits of the family members and how they differ primarily in their β subunits (see page

650, column 2 in particular). O'Connor et al. further describe their isolation of the hLH*β core fragment* which is unique from the hLHβ as it lacks some of the internal sequences of the β subunit of hLH. O'Connor further note the amino acid *identity* between the hLH *β core fragment* and the hCG *β core fragment* at the amino terminus but its apparent dissimilarity toward the COOH terminus, noting a limited but distinct structural *dissimilarity* between the two. O'Connor note the use of this unique COOH terminus in hCG to generate antisera to eliminate the problem of cross-reactivity with hLH. Finally O'Connor et al. note that although producing monoclonal antibodies which differentiate between hCG and hLH has not been straightforward, monoclonal antibodies could be screened and selected for specificity because of the unique capability of monoclonal antibody technology. O'Connor further note that subsequent screening yielded an antibody with high affinity to hCG and free hCG β-subunit but not the hLH or its β-subunit (see page 659, column 2 in particular).

Consequently O'Connor et al. teach the structural similarity between hCG, hCGβ, hCG β-core fragment, hLH, hLHβ, and hLH β-core fragment and how this similarity leads to problems with immunological cross-reactivity. O'Connor further teach that the major structural dissimilarity in the β-subunits between these family members is at the COOH terminus which can be exploited to generate hCG-specific antisera.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen Clemens whose telephone number is (703) 308-8365. The examiner can normally be reached Monday through Friday from 8:00 AM to 5:00 PM. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (703) 308-3973. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center telephone number is (703) 305-7401.

Karen Clemens, Ph.D.
Patent Examiner
Technology Center 1600
June 1, 2001

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